

Federal Aviation Administration, Fairbanks Flight Standards District Office

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AIRWORTHINESS NEWSLETTER

For Inspection Authorization Holders, A&Ps and Repairmen

Larry E. Dalrymple—Manager

Gilbert “Gil” R. Glover—Assistant Manager

James H. Tupper—Airworthiness Supervisor

February 2003

INTRODUCTION

February is upon us once again and time for another maximum effort from our highly-knowledgeable, industrious, talented, good looking, and obviously highly imaginative airworthiness staff to present their latest offering of the Newsletter. We all hope your holiday season went well and that your (real and virtual) journeys to Aspen, Puerto Vallarta, Cancun, Honolulu, etc., have helped get you through the long dark nights of the Arctic winter. Take heart, the days are getting longer even as we type.

We seem to have hit a dry spell for articles from you experts out there and would really like to have you share your knowledge and experience. You don't have to be a novelist. Just get your ideas down on paper or E-mail. The editors on our administrative staff are efficient and merciful. To those who have contributed, we appreciate your efforts and look forward to hearing from you again soon.

Remember that this publication is for you, the maintenance professional, and your compliments, criticisms, and ideas are important in keeping this publication informative, interesting, and helpful as you go about your vital tasks.

IA Renewal !!

IA's—don't forget to renew in the month of March. Enclosed with this Newsletter is FAA Form 8610-1, Mechanic's Application for Inspection Authorization. If you plan to renew by mail, include FAA Form 8610-1 and FAA Form 8310-5, mail to the address above, and please print "IA Renewal" on the outside of the envelope.

IA Renewal Seminars

Anchorage – Friday, March 7, 2003, 8 AM–5 PM, FAA hangar (next to Anchorage FSDO). Sponsored by Anchorage FSDO. Call (907) 271-2000 or (800) 294-5116 for more information.

Fairbanks – Wednesday, February 26, 2003, 8 AM–5 PM, Sophie's Station Hotel. Presented by Aviation and Electronics Schools of America. Call (800) 345-2742 (ext. 226) for more information.

Fairbanks – Friday, March 21, 2003, 8:30 AM–5:30 PM, Noel Wien Library, sponsored by the Fairbanks FSDO. The agenda is not set in stone as of yet. However, possible subjects include: Back to Basics; NDI; Compass Calibration; Shoulder Harness Installation; Data Plates; Propeller Balancing; Common FAR Violations; and, of course, the ever popular, Field Approvals. Inspectors will be available to sign your renewal. Call the Fairbanks FSDO (907) 474-0276 or (800) 294-5119 for details.

INSPECTORS

We had to check several times to make sure we are correct, and, for the first time in a long time, we find that there have been no changes in the airworthiness branch since the last Newsletter. Everyone who is here must like it here.

Here is the latest lineup:

Fairbanks Airworthiness Inspectors:

James H. Tupper, Supervisor
Roderick L. "Rod" Beaman, Avionics
Blayne C. Camp
George W. Earp, Avionics
John Q. Gamble
Harley A. Holt
Patrick E. "Rick" Hrubes
Eric L. Jones
David Karalunas

Hugh A. Keith
Steve Ketzer, Jr.
Robert "Jay" Kitchens - A/W SPM
Cary J. Meier
Kenneth C. Thomas
John S. Sims, Avionics
Hardy "Mark" Smith
Joseph T. "JT" Walsh

You may contact them by telephone at (907) 474-0276, or by E-mail using the following format: first name.middle initial.last name@faa.gov. No spaces, no caps. If you have questions or a problem, give them a call. They are here to help you!

SUBJECTS FOR UPCOMING A/W SAFETY MEETINGS

Future meetings are in the planning stages and will be announced by mailer, and posted on the Fairbanks FSDO web page.

Interesting and Important Maintenance Stuff

Data Plate Dilemma

By Inspector Blayne Camp

In the recent past I have become acutely aware of the problem arising from Cessna Aircraft's policies regarding replacement of aircraft data plates. Due to some very stringent Cessna, not FAA, requirements for inspections, evidence letters, etc., it has become almost impossible to acquire a data plate for older - read altered - Cessna aircraft. These requirements have really placed this exercise into the realm of financial and sometimes logistical impossibility. Especially if any modifications or STCs have been accomplished along the way.

This problem was addressed in a September, 1994 memo, from Richard O. Gordon, former manager of AAL-200, which stated, in essence, that an aircraft owner could, with proper FAA authorization, have a data plate fabricated locally, when unable to secure one from the manufacturer. This was all well and good at the time, but, as you know, time, managers, and circumstances change all things.

Effective August 1, 2000, all memos, administrative and technical, issued prior to September 30, 1997, were cancelled. Oops, now what?

I advised the AAL-230 Branch of the situation, and their take on the matter is that the procedures in the old (1994) memo are still valid. The AAL-230 Branch will be issuing a letter to that effect, and will suggest changes to the Airworthiness Aviation Inspector's Handbook 8300.10 to provide guidance for this situation. Nothing has come out in hard copy to date. We'll keep you advised.

Compass Swings

By Inspector Rod Beaman

The process of aligning an aircraft on known magnetic headings for the purpose of determining and correcting the degree of error in the magnetic compass is commonly referred to as “swinging the compass.”

The performance of a compass swing must be performed at a location certified to be free of magnetic anomalies. An airport that has received Federal grant-in-aid assistance is required to have a compass calibration pad that has been certified as such, and therefore is an ideal location to perform a compass swing.

The U.S. Geologic Survey of the Department of the Interior is available to conduct the necessary magnetic surveys to determine if, and certify that, a location meets the specifications of Advisory Circular 150/5300-13 Appendix 4 Paragraphs 5.a. and 5.d. The cost for this service is only what is necessary to cover the expense to the U.S. Geologic survey. Contact information is in Advisory Circular 150/5300-13 Appendix 4 Paragraph 6.d. There are also many other competent registered surveyors and engineers who are capable of performing these magnetic surveys.

Compass swing procedures for non-electrical compass systems (systems that require no electrical power to operate and/or indicate) are in Advisory Circulars 43.13-1B CHANGE 1 and 150/5300-13 Appendix 4 Paragraph 3.

The calibration and adjustment of remote indicating gyro compasses, polar path compasses, and other systems of this type must be done in accordance with the manufacturers maintenance instruction manuals and should be performed by a qualified instrument technician.

If a hairline sight or “master” compass is to be utilized, the design and calibration accuracy must be greater (preferably 4 times greater) than the design accuracy of the system being tested.

When utilizing the radials on an airport compass calibration pad, a correction factor must be calculated and applied to compensate for the annual drift of the Earth’s magnetic poles. The correction factor is derived by multiplying the magnitude of annual change by the time in years since the date of survey. Advisory Circular 150/5300-13 Appendix 4 Paragraph 6.c. specifies that the date of survey, as well as the magnitude and direction of annual change in magnetic north be marked on the surface of the calibration pad near the magnetic north mark.

It is interesting to note that during a recent survey of three sites on the Fairbanks International Airport (FAI) it was determined that the new compass pad, located at the south end of runway 19L, has serious magnetic anomalies and should not be used for compass calibration under any circumstances. The run-up area (elephant ear) adjacent to the north end of runway 19L has no magnetic anomalies but has no certified survey marks. The compass pad adjacent to the north end of runway 19R has no magnetic problems, but the current survey marks may be inaccurate. Bottom line: **Don’t use the compass pad at the south end of 19L and be sure to use a calibrated master compass if you use the elephant ear or the compass pad at the north end of FAI.**

ELECTRICAL LOAD ANALYSIS

by Inspector Rod Beaman

Electrical load calculations that only determine if the continuous electrical load can exceed 80 percent of the output load limits of the generator(s) or alternator(s), are not, and must not be confused with, an electrical load analysis.

An electrical load analysis is a complete and accurate analysis of the composite aircraft power sources and all electrical loads throughout the voltage range of the aircraft under the most adverse operating conditions during taxi, takeoff and climb, slow cruise, normal cruise, and landing, operations.

Methods of performing electrical load analysis can be found in Military Specification MIL-E-7016F “Electric Load and Power Source Capacity, Aircraft, Analysis of”, available for download from the Document Automation and Production Service of the Defense Logistics Agency, web address: <http://www.daps.dla.mil/>

If the analysis is to be a calculated one, data must also be available such that alternator/generator output in relation to engine RPM can be determined accurately. Battery capacity in Ampere-Hours must also be known.

Load analysis is begun with the initial state of charge of the battery less than or equal to 80 percent of nominal capacity.

The average charging current for each of the three rated time intervals during each of the operating conditions of: Start and Warm-up, Taxi, Takeoff and Climb, Cruise, Normal Cruise (the mil-spec calls it G-8, or combat cruise), and Landing, is then determined. This can be calculated by taking the charging factor from Figure 20 and utilizing the equation in paragraph 6.3.2 of MIL-E-7016F.

Current requirement is the sum of the average charging current and all equipment loads operating under the most adverse conditions (i.e. constant current through all fuses/circuit breakers at rated maximum), for each of the three specified time intervals during each operating condition.

As a “rule of thumb”, current requirement must not exceed 80 percent of the alternator(s)/generator(s) output at minimum required engine RPM during each operating condition.

Good stuff, Check it out!

Field Approvals: Be sure to checkout the draft AC (AC-FLD) on field approvals at www.opspecs.com/awcirculars. You can add your comments about the draft at the same site. Be nice!!

Did you know? Aircraft records can now be ordered on line at www.diy.dot.gov (diy) stands for “do it yourself.” You can get the records in paper form or on CD ROM. There is a nominal fee that you can pay online by credit card, and you should allow at least two weeks for delivery.

Mailing address change? You can take care of that, online at: <http://registry.faa.gov>.

Don't forget that AD's, AC's, FAR, TC Data Sheets, and more are available on the Internet at: www.airweb.faa.gov.

In Closing

Don't forget to renew your IA in March. There is no better way to do so than to join us for our seminar at the Noel Wien Library in Fairbanks on March 21. We are planning an informative and fun day complete with snacks, lunch, door prizes, dynamite speakers, and friendly inspectors on hand to update your paperwork. We'll have the coffeepot on early.

Since it is impossible for us to mail to all A&Ps in our District, when you have finished reading this Newsletter, please pass it on to your A&P buddies and/or other aviation professionals.

***'Till Next Time...
Keep 'em Flying!***

